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NAVAL AVIATION SYSTEMS TEAM

RESEARCH & ENGINEERING

The Technical Cooperation Program (TTCP)

Technical Panel Annual Meeting

Materials Group TP-5

Evaluation of Samples Using Ultrasound Imaging

William R.Davis
Dr. Ignacio Perez

16 - 20 October 2000

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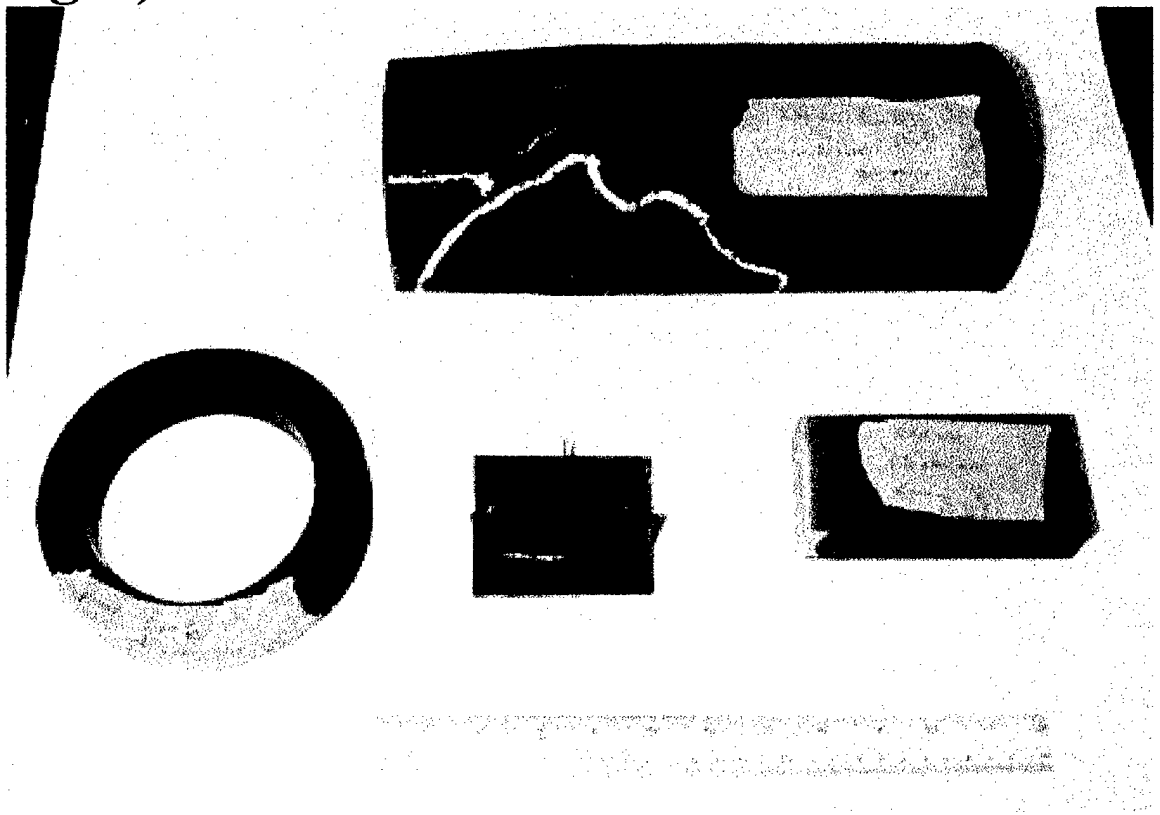
TCCP Sample Evaluation

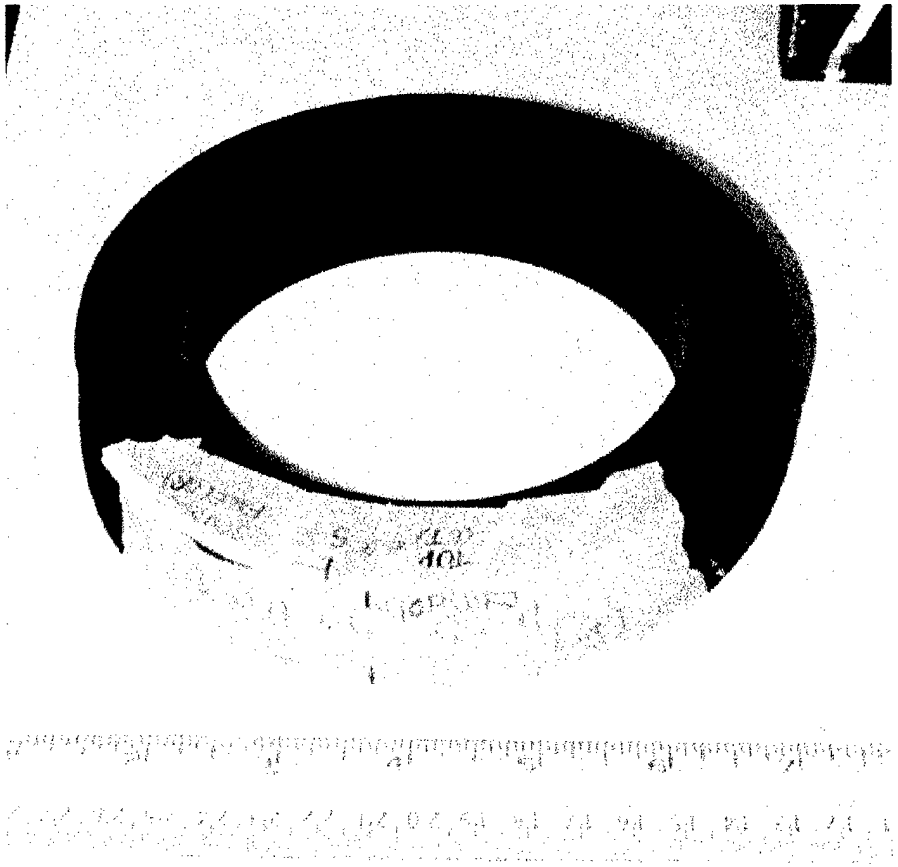
RESEARCH & ENGINEERING

RAH66 Quill Detector Face Drive Shaft (top), Quill Shaft (bottom left), small brace (bottom center), and flex beam (bottom right)



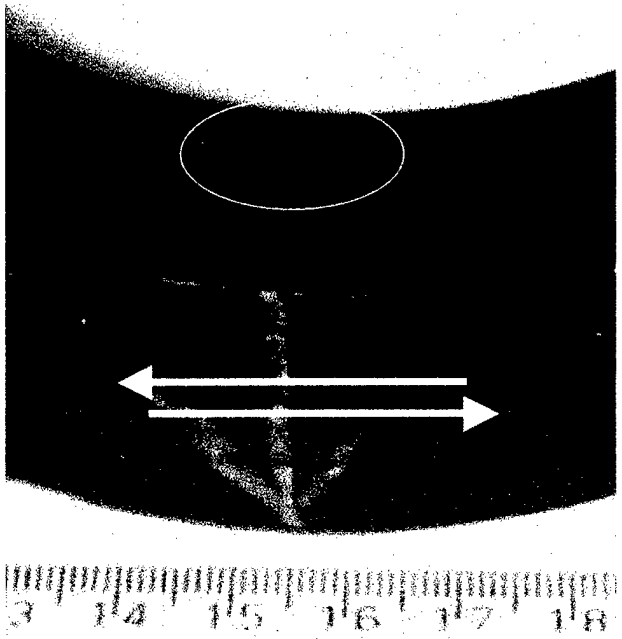
TCCP Sample Evaluation

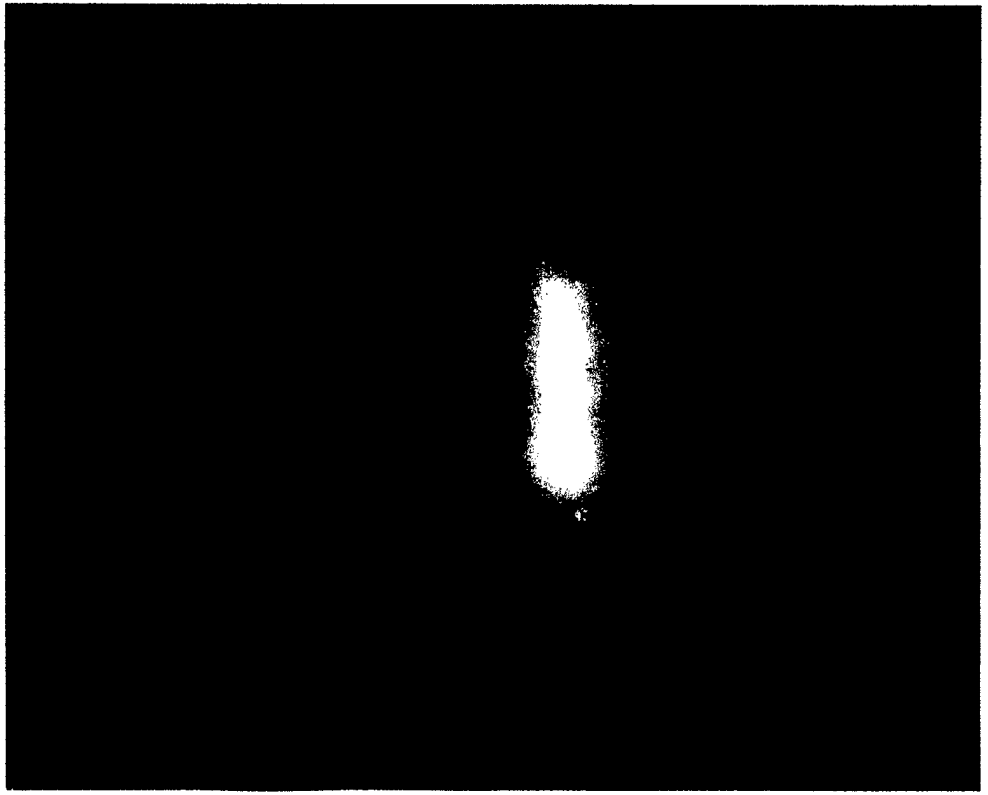
RAH 66 Quill Shaft 7/8" thick by 6" dia. By 1 1/8" high ring.



TCCP Sample Evaluation

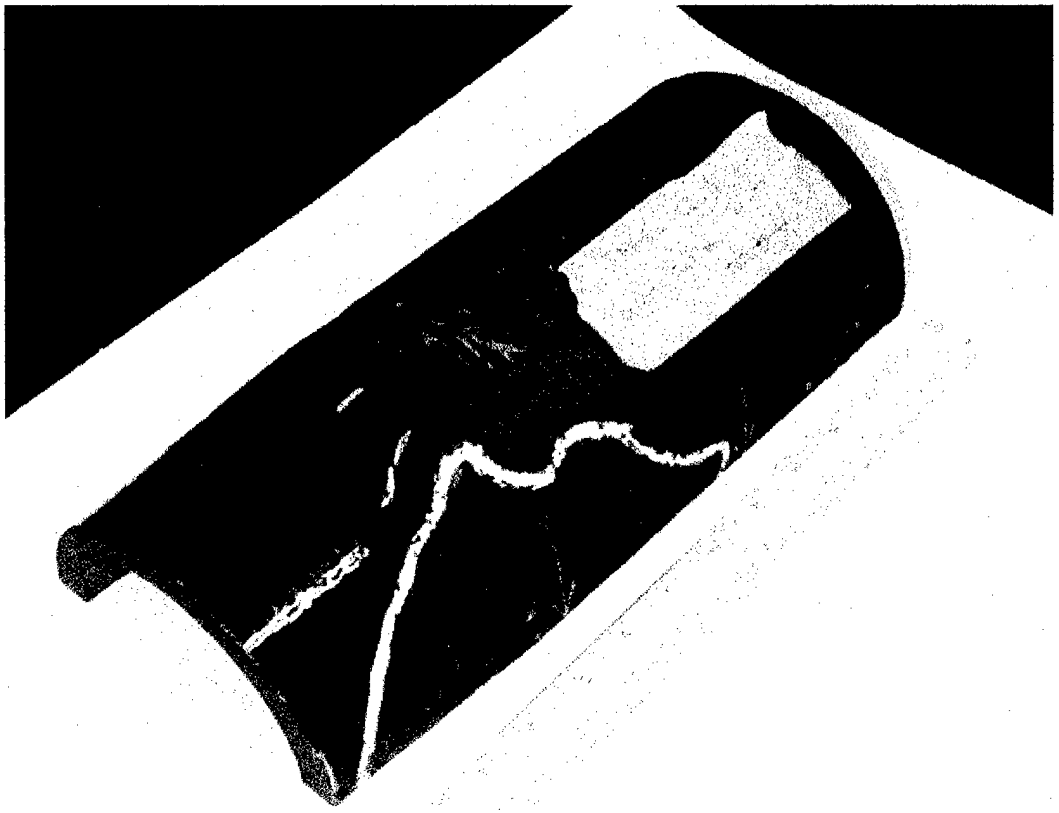
RAH 66 Quill Shaft is a 7/8" thick by 6" diameter by 1 1/8" high ring. A 1 MHz 1.5 " diameter transducer was used in through transmission mode. This shows a full height disbond 1/2" wide.





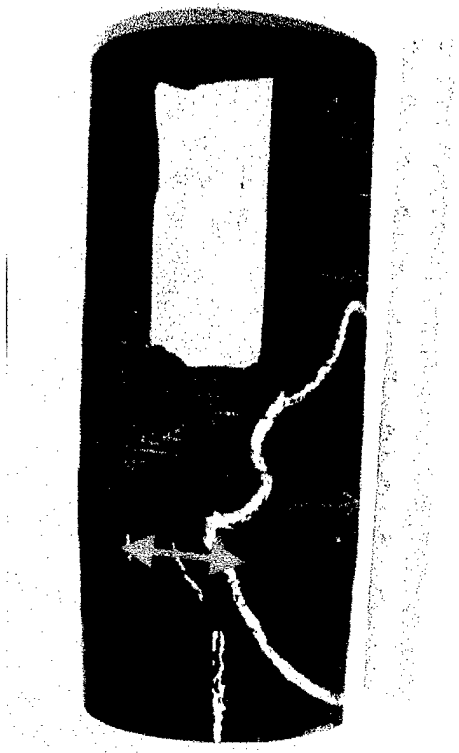
TCCP Sample Evaluation

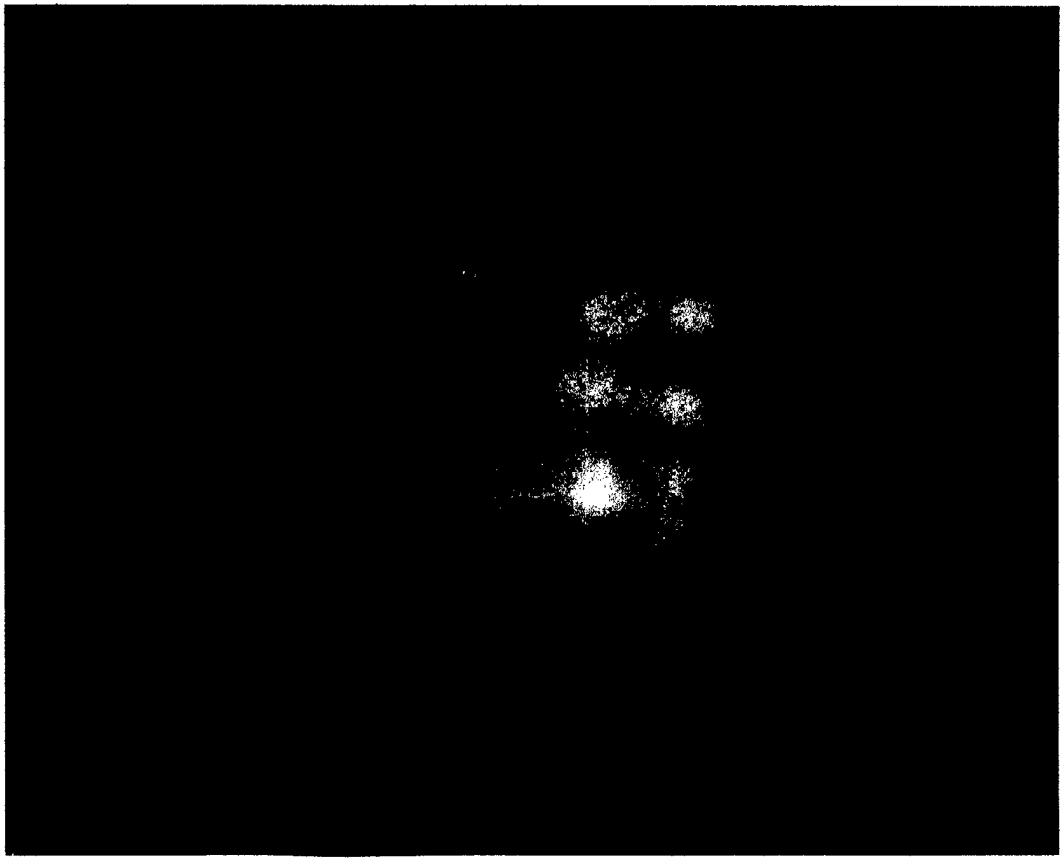
RAH66 Quill Detector Face (Dr) Shaft Examined by through transmission. Thickness is 1/2 inch to 1 inch. Height 12.5 inch , 5 3/4 inch diameter



TCCP Sample Evaluation

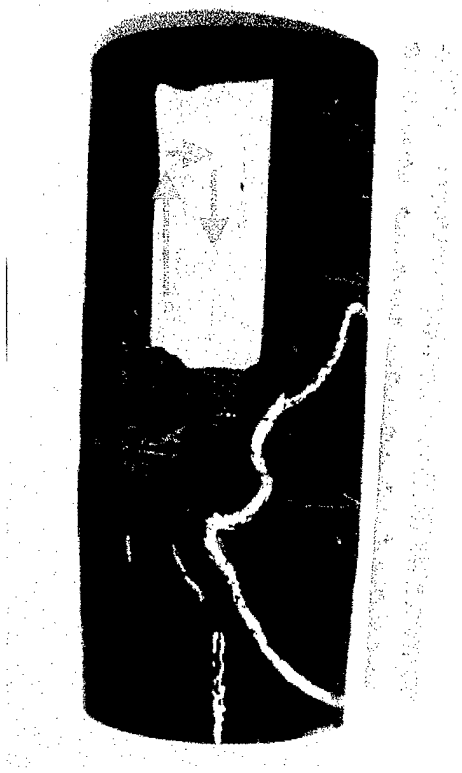
Quill Detector Face Bottom section –heavy thickness section examined by through transmission at 2.25 MHz

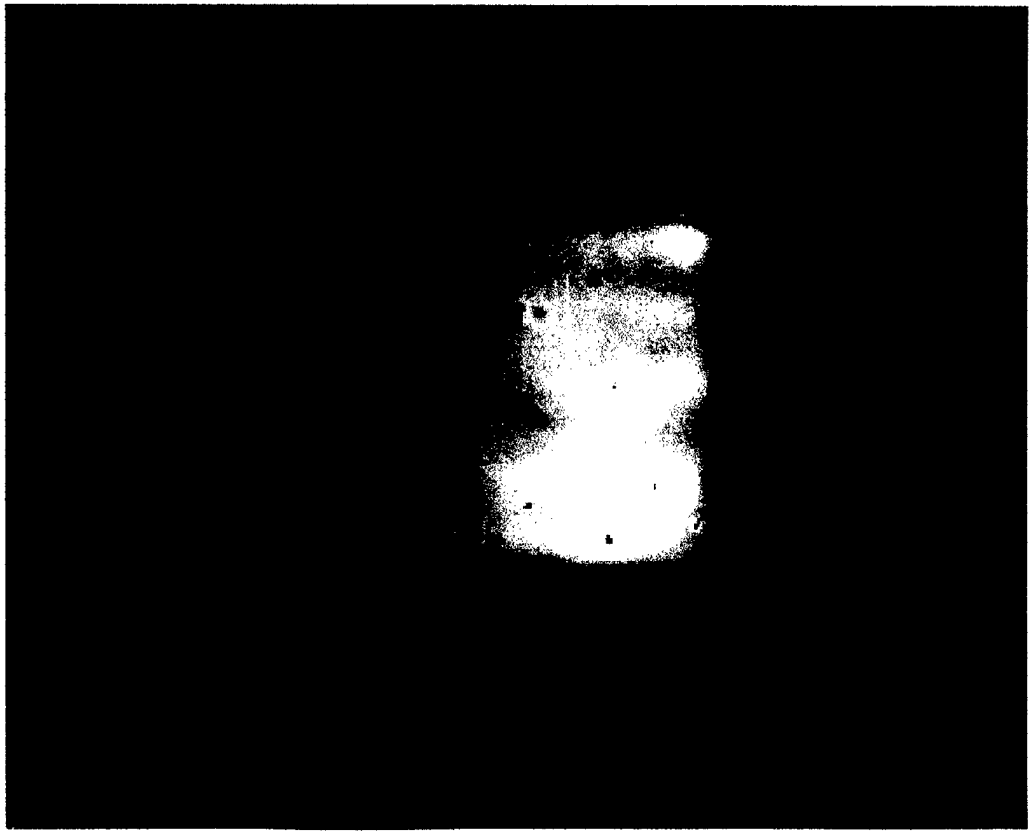




TCCP Sample Evaluation

RAH66 Quill Detector Face (Dr) Shaft imaged using a 2.5 MHz 1.5" diameter transducer in through transmission. The thin Top Section is approximately 0.625 inch thick.





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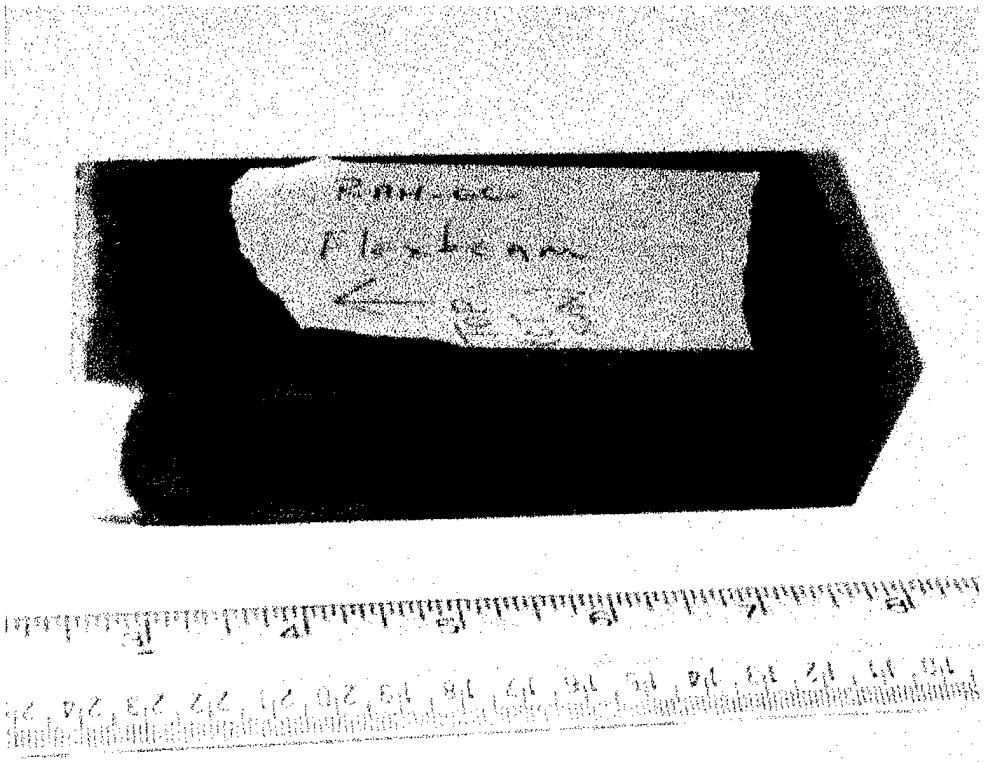
TTCP Sample Evaluation

RESEARCH & ENGINEERING

The RAH66 Flex beam, 1.125" thick x 5.25" x 2.375"



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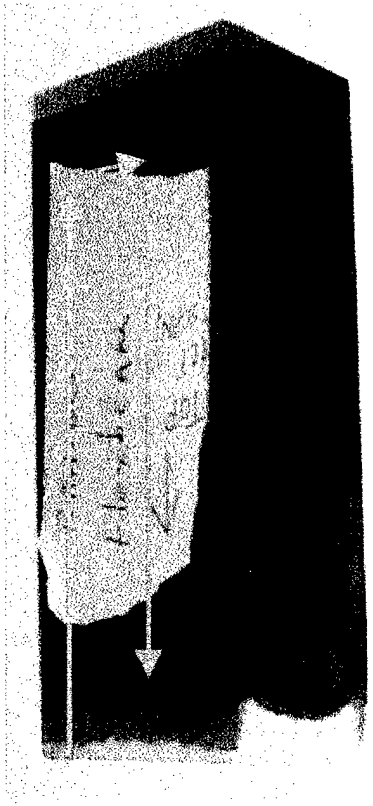
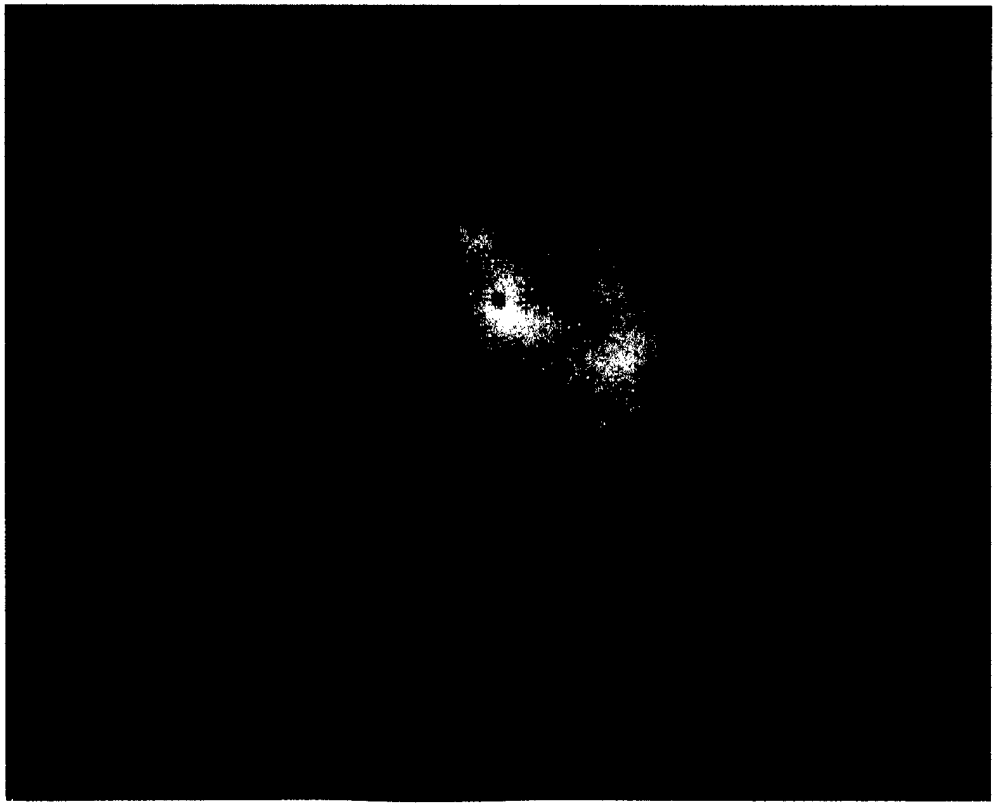
RAH66 Flexbeam imaged using Through Transmission at 2.25 MHz shows a darker line of marceling near the top





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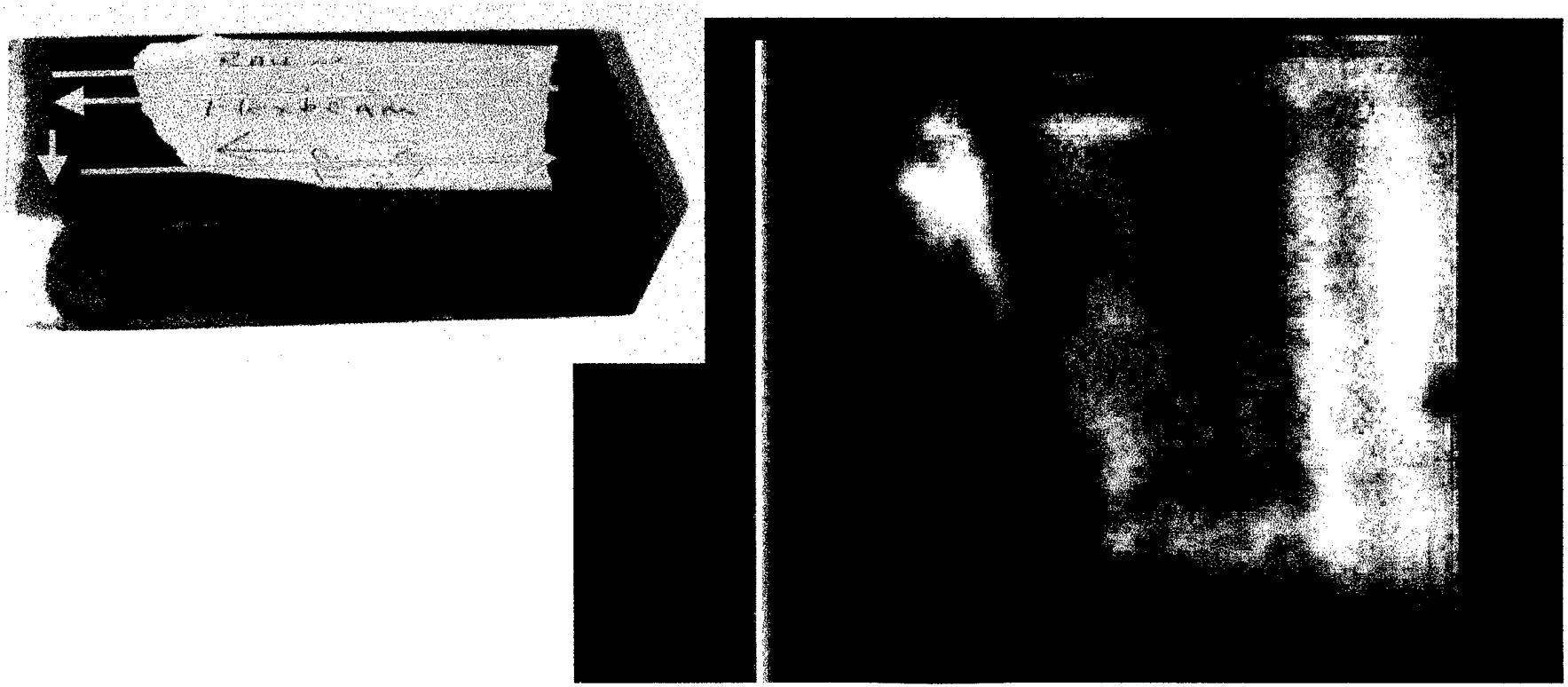
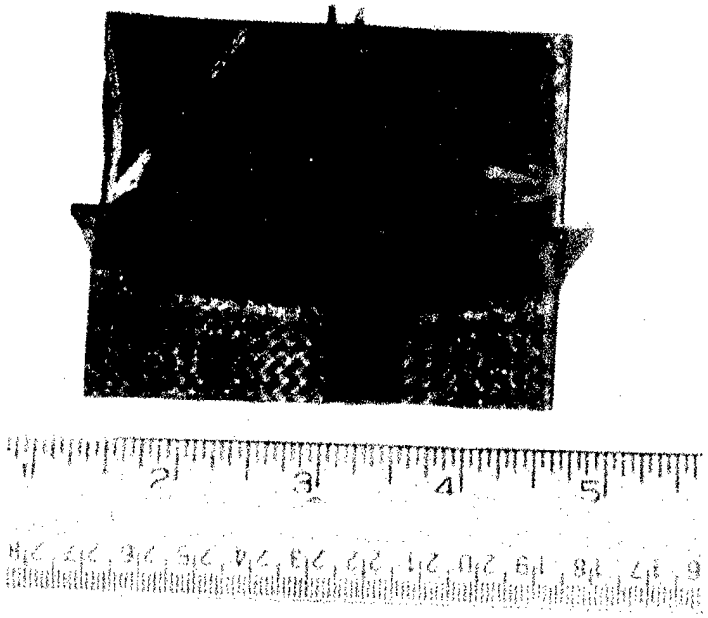
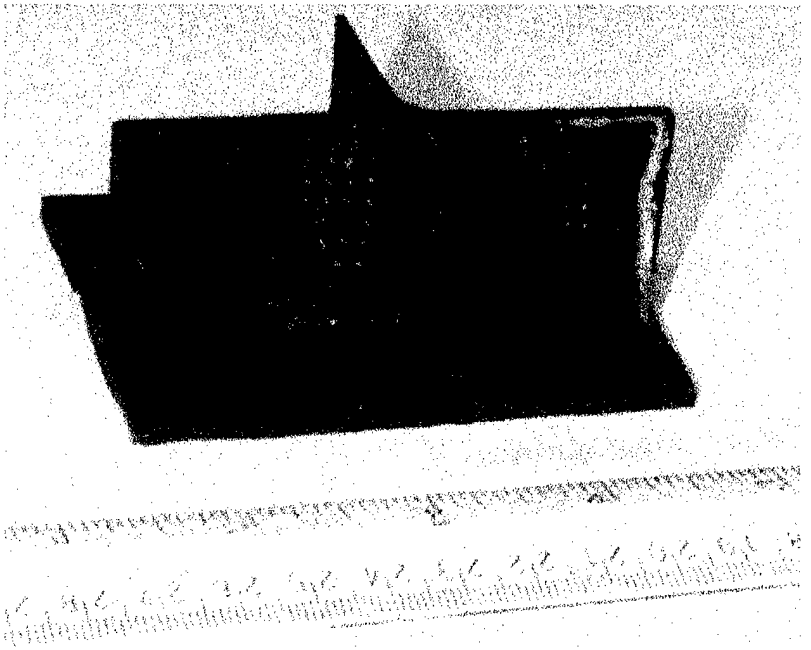
RAH66 Flex beam in tank. One sided imaging of the ultrasound by refection shows some near surface discontinuities near the end of the flex beam.



TTCP Sample Evaluation

IAMT prepreg box, overhead and side views





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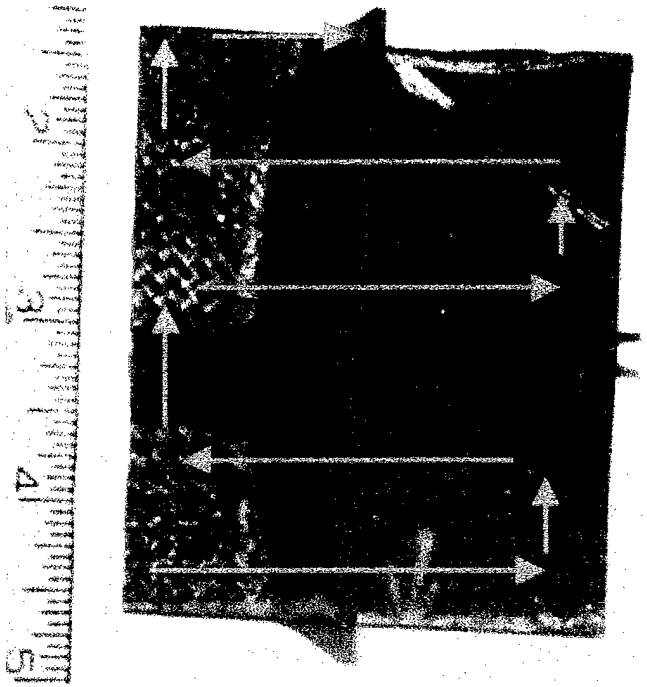
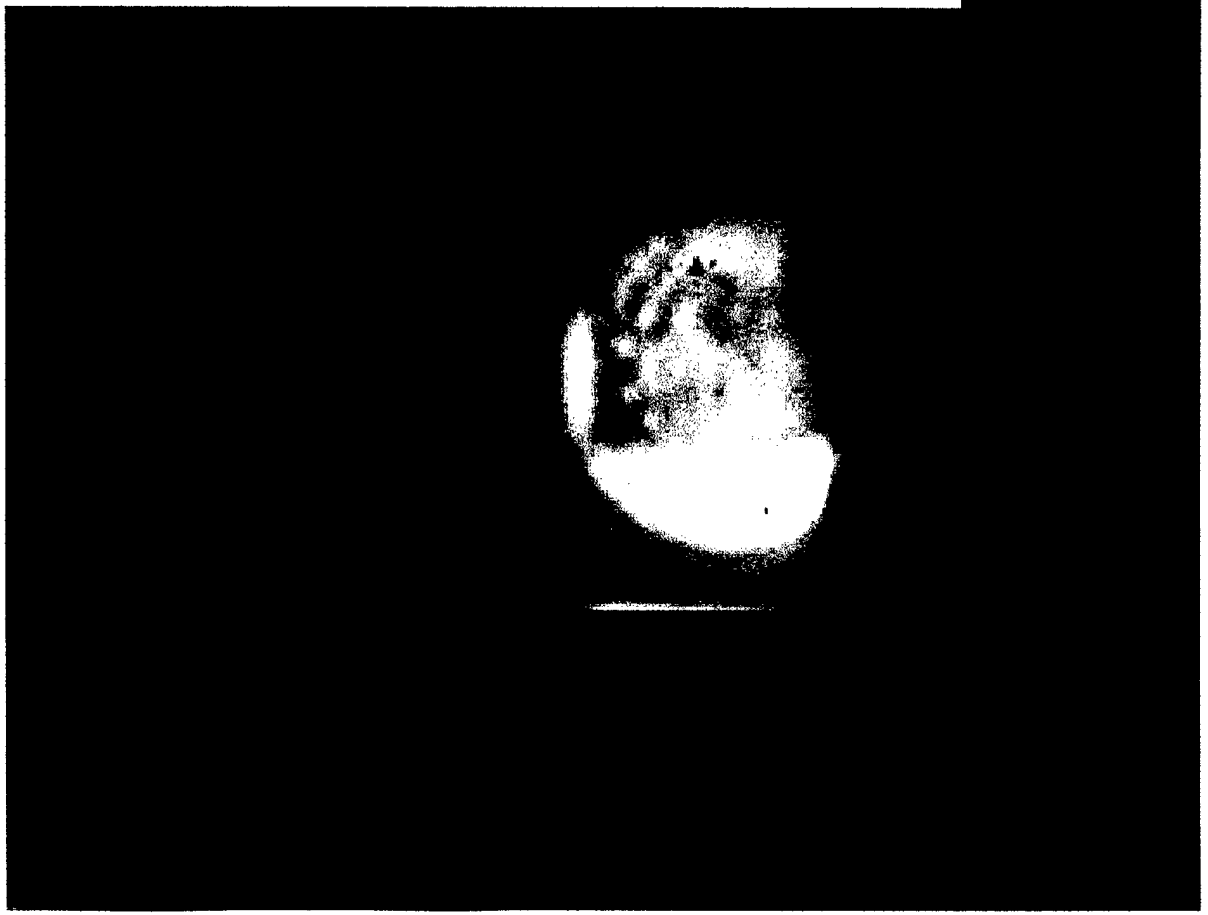
TCCP Sample Evaluation

RESEARCH & ENGINEERING

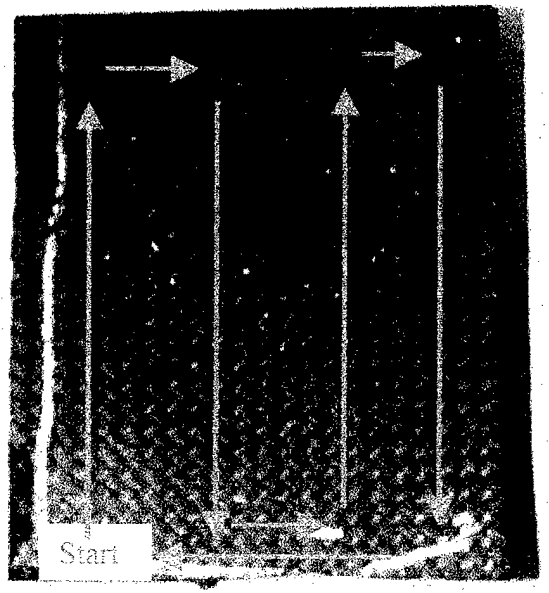
IAMT prepreg box imaged in through transmission using 5 MHz for high resolution

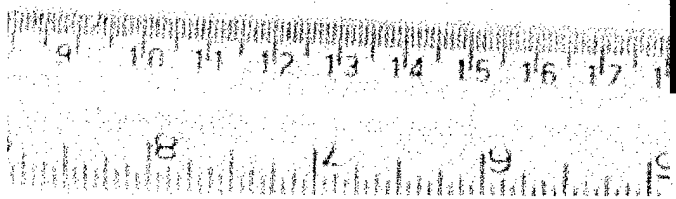


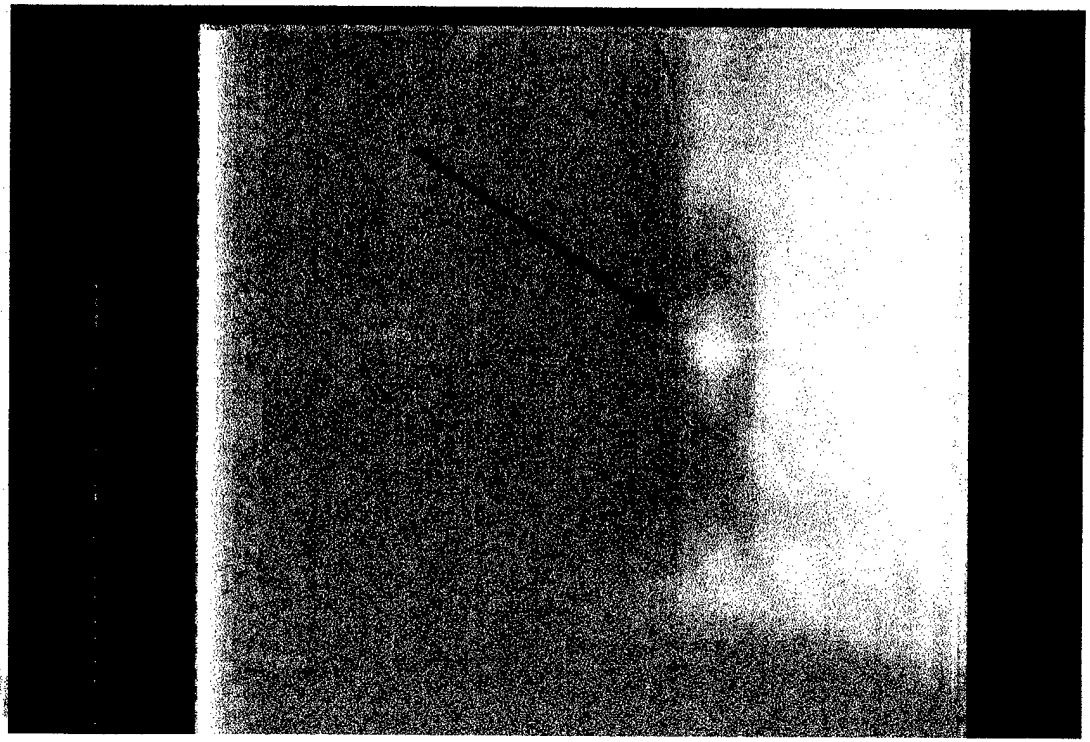


TCCP Sample Evaluation

IAMT prepreg box imaged using the reflection camera in the tank. Back reflection imaging of the bottom of the part shows a discontinuity on one corner, and a surface discontinuity

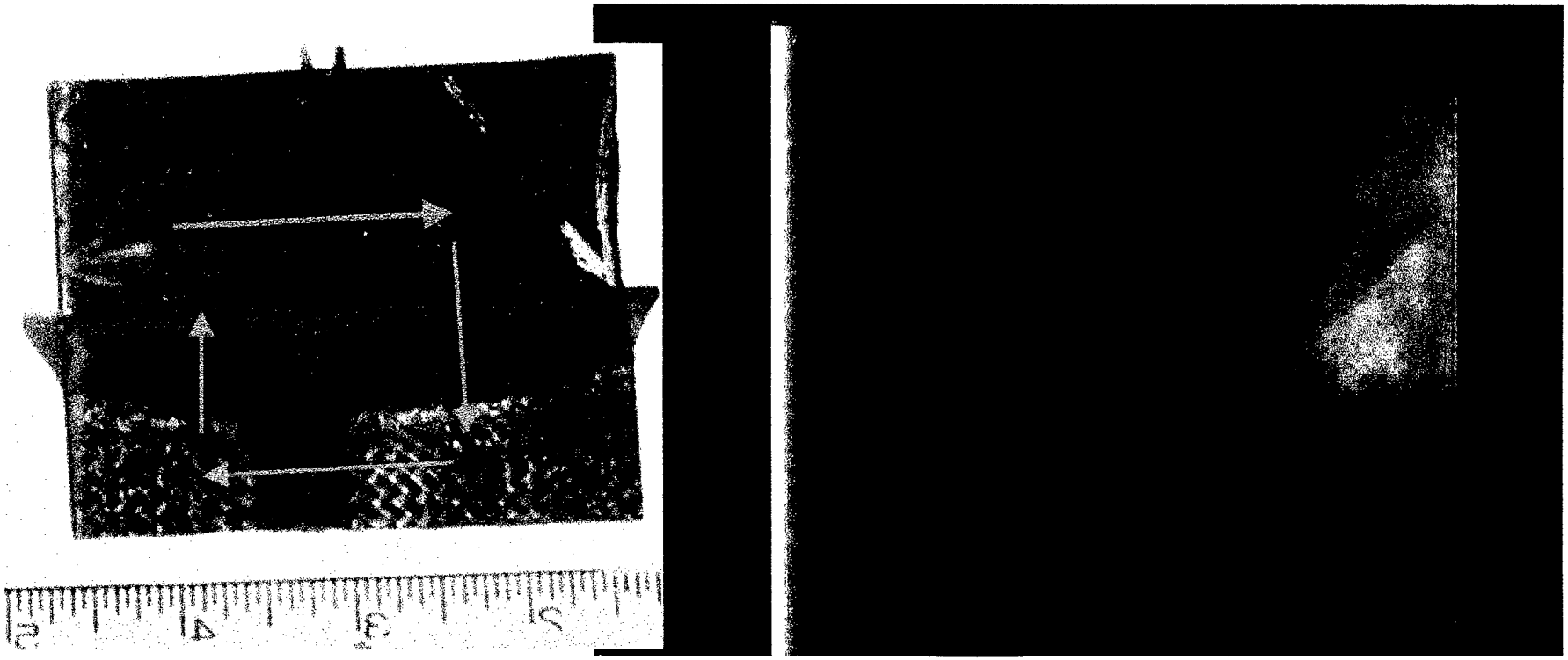






TCP Sample Evaluation

IAMT prepreg box imaged by reflection in the tank. Back reflection imaging with an increased time delay shows the triangular machined area and the 4 ribs



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3 cm thick balsa wood cored multilayer panel imaged using 5 MHz ultrasonic reflection camera in reflection